Engineering Design Notebook

Name_____

Project: "Roving on the Moon" Design a Rover

Engineering Design Process

1. Identify the problem:

2. Brainstorm some ideas to make a successful rover with the materials you have...

Background Knowledge:

Newton's Laws of Motion (brief demonstration)

Friction: Friction is the resistance of _____ when one object rubs against another. Anytime two objects _____   _____ each other, they cause _____. Friction works against the motion and acts in the _____ direction.

Potential Energy: Potential _____ is the stored energy an object has because of its position or state. A bicycle on top of a hill, a book held over your head, and a stretched spring all have _____   _____.

Kinetic Energy: Potential energy is _____ energy while kinetic energy is the energy of _____. When potential energy is used it is converted into _____ energy.

3.   Build
***Look at a car. What parts do you need to get it moving?

We are doing a simplified version of this.

Materials

Cardboard body 6 inches by 15 cm square

2 cardboard wheels 5 inches by 13 cm square (you can change design)

1 sharpened round pencil

2 rubber bands

ruler

tape

2 round mints

1 plastic drinking straw

scissors

1. First, make the body. Fold the cardboard into 3 equal pieces. Each part will be about 2 inches across. Fold long way.
2. Make the front wheels. Draw diagonal lines from corner to corner on the wheels. Poke a small hole in the center. On the body or chassis, Poke a hole on each end of the axle. Pull the pencil through…make sure the pencil can rotate and that the holes were even.
3. Push a wheel on each end and secure with tape.
4. Rear wheels: tape the straw under the back end of the rover. Slip a candy onto each end. Bend and tape the axle to stop the candies from coming off.
5. Attach rubber bands: Loop rubber bands together. Loop one end around the pencil. (I will cut small slits in the body). Slide the free end of the rubber bands into the slits.

You are free to design the wheels how you would like:

Draw your design below:

4.   Test and Evaluate

How did your design work?

How far did it move?

5. Redesign

What will you do to redesign? (you can draw a picture)

What worked better with your design? (you can draw a picture)

6. Share the solution/result.

How far did your rover go after the redesign?

What worked and what didn't?